Environmental Resource Management, Inc.
P.O. Box 5305, Bozeman, Montana 59717 Phone (406) 582-8491 email: ruwaller@gmail.com

August 17, 2017

Blazer Enterprises
Attn: Robin Blazer
P.O. Box 1418
Ennis, Montana 59729

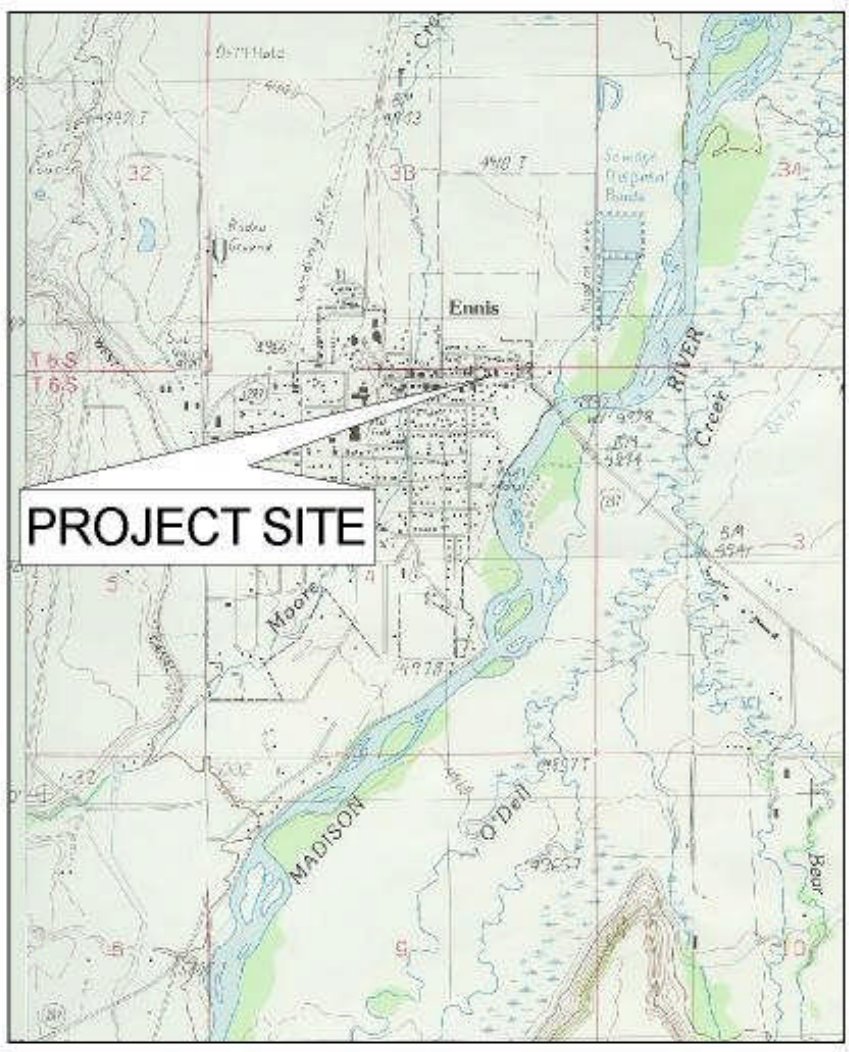
Subject: Corrective Action Work Plan
Former Everything Cowboy, 312 E. Main Street, Ennis, Montana
DEQ Facility ID No. 28-12772
DEQ Leak No. 1278, Work Plan ID 10662

Dear Ms. Blazer:

Environmental Resource Management, Inc. (ERM) is pleased to submit this Corrective Action Work Plan to outline activities associated with additional investigation and monitoring of subsurface petroleum contamination at the above referenced petroleum release site. Submittal of this work plan was requested by the Montana Department of Environmental Quality (DEQ) to further define the extent and magnitude of groundwater contamination from a petroleum release discovered in 1992 during removal of four underground storage tanks (USTs).

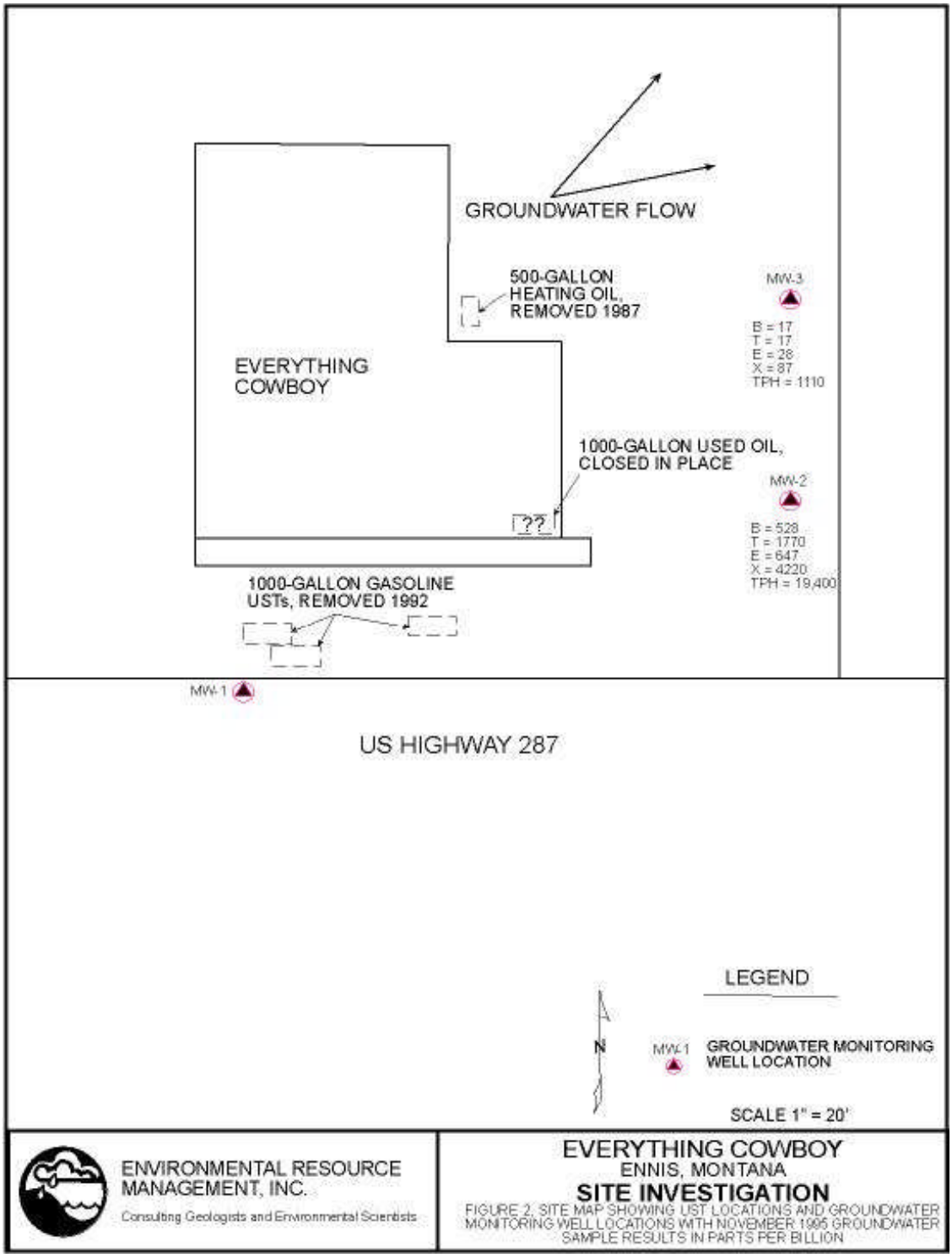
Background
The Everything Cowboy petroleum release site is located at 312 East Main Street in Ennis, Montana as shown on Figure 1. Four USTs were removed from the ground in 1992 (a fifth UST of 500-gallon capacity used for heating oil storage was removed prior to 1987) and petroleum contaminated soil and groundwater were observed. The USTs were observed to be rusty and perforated.

DEQ requested a Remedial Investigation to determine the extent and magnitude of soil and groundwater contamination. Gaston Engineering was retained to perform the investigation and three groundwater monitoring wells were installed at the locations shown on Figure 2. Petroleum contamination was



ENVIRONMENTAL RESOURCE MANAGEMENT, INC.
Consulting Geologists and Environmental Scientists

FORMER EVERYTHING COWBOY
ENNIS, MONTANA
SITE INVESTIGATION
FIGURE 1, REGIONAL SITE LOCATION MAP

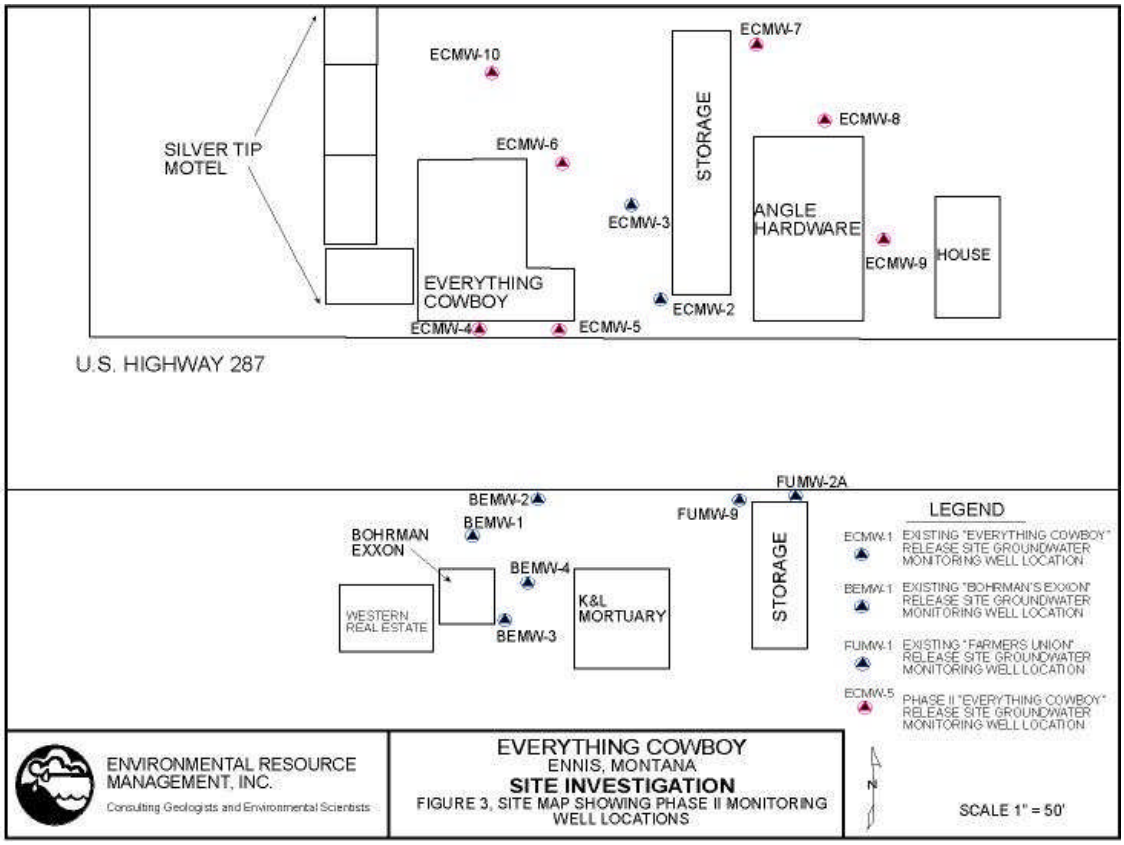

GROUNDWATER FLOW
500-GALLON
HEATING OIL,
REMOVED 1987
MW-3
B = 17
T = 17
E = 28
X = 87
TPH = 1110
EVERYTHING
COWBOY
1000-GALLON USED OIL,
CLOSED IN PLACE
??
MW-2
B = 528
T = 1770
E = 647
X = 4220
TPH = 19,400
1000-GALLON GASOLINE
USTs, REMOVED 1992
MW-1
US HIGHWAY 287
LEGEND
N
MW-1
GROUNDWATER MONITORING
WELL LOCATION
SCALE 1" = 20'
ENVIRONMENTAL RESOURCE
MANAGEMENT, INC.
Consulting Geologists and Environmental Scientists
EVERYTHING COWBOY
ENNIS, MONTANA
SITE INVESTIGATION
FIGURE 2, SITE MAP SHOWING UST LOCATIONS AND GROUNDWATER
MONITORING WELL LOCATIONS WITH NOVEMBER 1995 GROUNDWATER
SAMPLE RESULTS IN PARTS PER BILLION

encountered in soil samples obtained from monitoring wells MW-2 and MW-3 and laboratory analyses indicated the presence of 670 mg/kg and 300 mg/kg Total Petroleum Hydrocarbons (TPH) respectively. Petroleum contamination was not noted during installation of monitoring well MW-1 (presumably upgradient) and laboratory analysis of a soil sample obtained from that boring at seven feet below ground surface contained non-detectable amounts of petroleum hydrocarbons.

ERM, Inc. conducted a Phase II Remedial Investigation in September-October 2004 that consisted of installing and sampling seven groundwater monitoring wells within and around the subject site as shown on Figure 3. Petroleum contaminated soil was found to be widespread across the site at the air-water interface at approximately six feet below ground surface. Soil samples analyzed during the investigation contained 310-4140 mg/kg Total Purgeable Hydrocarbons (TPH). Groundwater contamination was found in all of the monitoring wells and samples collected from the wells contained 35-82,870 µg/L TPH.

On April 15, 2013, ERM began removal of the remaining petroleum contaminated source soil and ultimately completed excavation of approximately 2930 cubic yards of soil contaminated with gasoline and diesel fuel. Petroleum contaminated soil was removed from beneath the remainder of the project site and from beneath the city alley north of the project site. The municipal sanitary sewer main serving residences north of the project site was partially removed and petroleum contaminated soil was removed from contact with the sewer main. Potential impacts to the sewer main from the petroleum contaminated soil were successfully mitigated through the excavation work.

DEQ requested installation of three additional soil borings to be completed as groundwater monitoring wells and completion of a vapor intrusion (VI) investigation. The following sections outline additional tasks that will be completed to provide additional information necessary to quantify risk associated with this petroleum release.


ECMW-10
ECMW-7
ECMW-8
ECMW-6
SILVER TIP MOTEL
STORAGE
ECMW-3
ANGLE HARDWARE
ECMW-9
HOUSE
EVERYTHING COWBOY
ECMW-2
ECMW-4
ECMW-5
U.S. HIGHWAY 287
FUMW-2A
BEMW-2
FUMW-9
BEMW-1
BOHRMAN EXXON
BEMW-4
K&L MORTUARY
WESTERN REAL ESTATE
BEMW-3
STORAGE
LEGEND
ECMW-1 EXISTING "EVERYTHING COWBOY" RELEASE SITE GROUNDWATER MONITORING WELL LOCATION
BEMW-1 EXISTING "BOHRMAN'S EXXON" RELEASE SITE GROUNDWATER MONITORING WELL LOCATION
FUMW-1 EXISTING "FARMERS UNION" RELEASE SITE GROUNDWATER MONITORING WELL LOCATION
ECMW-5 PHASE II "EVERYTHING COWBOY" RELEASE SITE GROUNDWATER MONITORING WELL LOCATION
ENVIRONMENTAL RESOURCE MANAGEMENT, INC.
Consulting Geologists and Environmental Scientists
EVERYTHING COWBOY
ENNIS, MONTANA
SITE INVESTIGATION
FIGURE 3, SITE MAP SHOWING PHASE II MONITORING WELL LOCATIONS
N
SCALE 1" = 50'

Site Geology

Site geology is characterized by fine- to coarse-grained alluvium deposited by the Madison River. Shallow groundwater occurs at approximately 5-6 feet below ground surface and flows northeasterly toward the Madison River, situated approximately 900 feet east of the site.

Scope of Work

The following Scope of Work is designed to provide scientific data that will be used to determine the degree of risk that the petroleum release may pose to human and environmental receptors. Proposed tasks to be performed during this phase of investigation include installation of three soil borings to be completed as groundwater monitoring wells, soil and groundwater sampling, completion of a vapor intrusion investigation and reporting. These tasks are necessary to gain further knowledge regarding the extent and magnitude of soil and groundwater contamination beneath the site and to make risk-based decisions regarding impacts that this petroleum release may pose to any identified receptors.

Soil Boring and Groundwater Monitoring Well Installation

Three soil borings to be completed as groundwater monitoring wells will be installed using a hollow-stem auger drilling rig. One soil boring will be installed in the former gasoline UST basin, one soil boring will be installed in the former heating soil UST basin or immediately downgradient and one soil boring will be installed downgradient of the closed-in-place used motor oil UST. Soil borings and groundwater monitoring wells will be installed to a total depth of approximately 15 feet below ground surface such that the wells penetrate the saturated zone sufficiently to allow for seasonal groundwater fluctuations. All borings will be completed with two-inch diameter Schedule 40 PVC well screen installed from total depth to approximately three feet below ground surface and blank well casing to ground surface. The annulus around the well screen will be filled with 10-20 mesh Colorado silica from total depth to approximately one foot above the top of the screened interval and bentonite chips will be used to fill the remaining annulus to ground surface. Each well will be completed with a bolt-down steel manhole cover and fitted with a locking compression plug.

Material Sampling
Soil samples will be obtained continuously from each boring and logged for lithology, texture, color, moisture and volatile petroleum content. All soil samples will be visually classified for texture using the Unified Soil Classification System (USCS) according to ASTM-D-2488. Soil samples from two foot intervals and from obvious areas of petroleum discoloration will be analyzed for volatile petroleum hydrocarbons using a Photovac 2020 photo ionization detector (PID) with a standard heated jar headspace method. One soil sample corresponding to the interval that exhibits the highest heated headspace reading and/or from the air-water interface will be analyzed at an approved **a**nalytical laboratory. Up to two soil samples will be collected from each soil boring.

Soil samples collected from the former gasoline UST basin will be analyzed for Volatile Petroleum Hydrocarbons (VPH), for Ethylene dibromide (EDB) and for 1,2 Dichloroethane (DCE). Soil samples collected from the former heating oil UST basin will be analyzed for VPH and for Extractable Petroleum Hydrocarbons (EPH) Screen. Soil samples collected from the former used motor oil UST basin will be analyzed for VPH, EPH Screen, RCRA Metals + zinc and for Volatile Organic Compounds (VOCs) using EPA Method 8260B low level.

Well Development/Surveying
Each monitoring well will be developed using a peristaltic pump until no further improvements in water clarity are noted. Static water levels will be measured in all of the newly installed wells following a 24 hour equilibration period after development. Water level measurements will be obtained using a Keck ET-89 electronic water level indicator.

All newly installed and existing wells will be surveyed for elevation within $\pm$ 0.01 feet and referenced to an established local USGS benchmark elevation by a Montana Registered Land Surveyor.

Groundwater Sample Collection and Analysis
Groundwater samples will be collected from all of the existing monitoring wells and from the newly installed monitoring wells no sooner than 24 hours after development. Groundwater sample purging will be performed using a peristaltic pump fitted with polyethylene tubing. Sample purging will continue until ORP, pH,

conductivity and temperature measurements stabilize. Groundwater samples will be collected immediately upon stabilization of the indicator parameters. Groundwater samples will be decanted into appropriate laboratory provided sample containers, preserved as necessary and placed on ice while awaiting delivery to the analytical laboratory. Groundwater samples will be analyzed at Alpine Analytical in Helena, MT.

Groundwater samples collected from the former gasoline UST basin will be analyzed for Volatile Petroleum Hydrocarbons (VPH), for Ethylene dibromide (EDB) and for 1,2 Dichloroethane (DCE). Groundwater samples collected from the former heating oil UST basin will be analyzed for VPH and for Extractable Petroleum Hydrocarbons (EPH) Screen. Groundwater samples collected from the former used motor oil UST basin will be analyzed for VPH, EPH Screen, PAHs using EPA Method 8270C SIM low level and for Volatile Organic Compounds (VOCs) using EPA Method 8260B SIM low level.

Vapor Intrusion Investigation

It is unknown whether the petroleum release at the former Everything Cowboy facility is impacting indoor air quality in the building located at 312 East Main Street in Ennis, MT. A vapor intrusion investigation will be conducted in accordance with the Montana Vapor Intrusion Guide. An "Occupied Building Questionnaire" will be completed in preparation for the VI investigation.

The VI investigation will be conducted during December 2017 and will consist of installing three subslab vapor sampling points within the building; one near the former gasoline UST basin, one near the used motor oil UST basin and one near the former heating oil UST basin. Grab samples will be collected from the subslab vapor sampling points. Three indoor air samples will also be collected over an eight hour sampling period to document air quality within the site building. All of the collected air samples will be analyzed using EPA Method TO-15 and Massachusetts Air Phase Petroleum Hydrocarbons (APH) Method at Pace Analytical in Minneapolis, MN.

One groundwater sample will be collected concurrently with the VI investigation from the groundwater monitoring well installed within the former gasoline UST basin. The groundwater sample will be analyzed for VPH, EDB and DCE at Alpine Analytical in Helena, MT.

Investigative Methods

Methods practiced during this investigation will follow generally accepted practices of similar consulting firms in the same geographical area. Quality Assurance/ Quality Control methods will be employed throughout all phases of this investigation to ensure meaningful and reproducible results and data.

Health and Safety

Health and safety issues will be addressed throughout this investigation to prevent exposure of site workers and other onsite personnel to potentially hazardous situations and chemical compounds. Several physical hazards will inherently be present throughout the field investigation while heavy equipment is being utilized for test pit excavation. Site specific health and safety precautions and information will be contained in a Health and Safety Plan which will remain onsite during all field activities.

Project Costs

Costs associated with implementation of this work plan are outlined below.

COST ESTIMATE--EVERYTHING COWBOY, ENNIS, MT

TASK	UNIT COST	COST
Task 1-Well Installation		
Project management	3.0 hrs @ $110/hr	$330.00
Borehole/well installation, Scientist II	15.0 hrs @ $100/hr	1500.00
Well development, Scientist II	3.0 hrs @ $100/hr	300.00
PID rental	2 days @ $74.00/day	148.00
Laboratory analysis	6 VPH soil @ $135 ea.	810.00
	4 EPH Screen @ $70 ea.	280.00
	2 RCRA metals @ $120 ea	240.00
	2 8260B @ $150 ea.	300.00
Sampling fee	6 samples @ $10 ea.	60.00
Mobilization,2 RTs from Bozeman	4.0 hrs @ $100/hr	400.00
Mileage, 4WD field pickup	240 miles @ $0.56/mile	134.40
Per Diem	2 days @ $23/day	46.00
Drilling services, three wells to 15 ft.	Haz Tech bid	4067.50
Task 2-Well Sampling		
Project management	1.0 hr @ $110/hr	$110.00
Groundwater sample collection	10 samples @ $180 ea.	1800.00
Laboratory analysis	10 VPH @ $135 ea.	1350.00
	2 EPH Screen @ $70 ea.	140.00
	1 8270C SIM @ $150 ea	150.00
	1 8260B SIM @ $150 ea.	150.00
Sampling fee	10 samples @ $10 ea.	100.00
Mobilization, RT from Bozeman	2.0 hrs @ $100/hr	200.00
Mileage, 4WD field pickup	120 miles @ $0.56/mile	67.20
Per Diem	1 day @ $23/day	23.00
Task 3-Surveying		
Project management	1.0 hr @ $110/hr	$110.00
Surveying services	estimated	1200.00
Onsite supervision, Scientist II	2.0 hrs @ $100/hr	200.00
Mobilization, RT from Bozeman	2.0 hrs @ $100/hr	200.00
Mileage, 4WD field pickup	120 miles @ $0.56/mile	67.20
Per Diem	1 day @ $23/day	23.00

Task 4-VI Investigation		
Project management	2.0 hrs @ $110/hr	$220.00
Vapor probe installation and sample collection	10.0 hrs @ $100/hr	1000.00
Rotary concrete hammer drill rental	1 day @ $150/day	150.00
Misc. supplies		100.00
Groundwater sample collection	1 sample @ $180 ea.	180.00
PID rental	1 day @ $74.00/day	74.00
Laboratory analysis	1 VPH water @ $135 ea.	135.00
	1 EDB water @ $120 ea.	120.00
	1 DCE water @ $120 ea.	120.00
	6 TO-15/APH @ $325 ea.	1950.00
Sampling fee	7 samples @ $10 ea.	70.00
Mobilization, RT from Bozeman	2.0 hrs @ $100/hr	200.00
Mileage, 4WD field pickup	120 miles @ $0.56/mile	67.20
Per Diem	1 day @ $23/day	23.00
Task 5-Reporting		
AR-07 Report	32.0 hrs @ $100/hr	$3200.00
TOTAL ESTIMATED COST		**$22,115.50**

Limitations

This work was performed in accordance with generally accepted practices of other consulting firms conducting similar studies. ERM observed that degree of care and skill generally exercised by other consultants under similar conditions. ERM's findings and conclusions must not be considered as scientific certainties, but as opinions based upon our professional judgment based upon the data gathered during the course of this investigation. Other than this, no warranty is implied or intended.

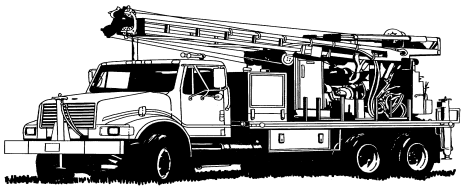
Submitted by
Environmental Resource Management, Inc.

Robert H. Waller
Project Geologist

cc: PTRCB
PTCS

Enclosures: Drilling bids

HAZ TECH Drilling, Inc.



P.O. Box 30622
2910 Hannon Road, Suite #6
Billings, MT 59107
Phone: 406-896-1164 or 800-359-1502
Fax: 406-896-1462

Proposal

TO: Environmental Resource Management, Inc.
ATTN: Bob Waller
P.O. Box 5305
Bozeman, MT 59717
Ph-406-582-8491

Description:
3-14ft wells with 10ft of .020 screen and flush mount covers.

DATE: 8/11/2017

PROJECT: Ennis, MT
04-182

TERMS: Net 30 Days

	UNITS EST.	UNIT PRICE	AMOUNT EST.
**********	**********	**********	**********
Mob/ Demob, Per Mile	400	$3.25	$1,300.00
Support Truck, Per Day	2	$100.00	$200.00
Perdiem, Per Crew Day	2	$46.00	$92.00
Lodging, Per Night, Estimated	1	$200.00	$200.00
Auger Drilling, Per Ft	42	$18.50	$777.00
Well Installation, Per Ft	42	$29.25	$1,228.50
Flush Mount Vaults with Concrete, Each	3	$90.00	$270.00
Standby, Per Hr	0	$150.00	$0.00
			**********
		ESTIMATED TOTAL:	$4,067.50

Notes:
1) Client is responsible to clear location of utilities.
2) Client is responsible for disposal of drill cuttings.
3) Client will be invoiced only the amounts used.
4) We assume that site is accessible by truck mount drill rig.

Proposal By: Paul Bray

Petroleum Tank Release Compensation Board

Soil Boring/Monitoring Well Installation Unit Cost Worksheet

Contractor Information

Company Name: Boland Drilling
Address: 4701 N Star Blvd
City, State, Zip: Great Falls, MT 59405
Cost Estimator: Chris Boland
Phone: 406-761-1063
:
8/14/2017

Project Information and Specifications

Facility ID #
Address:
Release #
Ennis
WP ID # 04-182

Type of Drilling Equipment

Hollow-Stem Augers	x
Air Rotary	
Direct Push	
Other (please specify)	

Soil Boring

Number of Borings	3
Boring Diameter (inches)	8
Depth (per boring - ft)	14

Surface: Concrete Asphalt Barren
Soil Disposal: Onsite Stockpile Drums
Abandonment: Bentonite Soil Cuttings

Soil Sampling

Continuous Soil Sampling	
Interval Soil Sampling (specify interval)	
No Sampling	

Monitoring Well Specifications

Number of Wells	3
Depth (per well)	14
Estimated Depth to Groundwater (ft)	
Boring Diameter (inches)	8
Casing Diameter and type (inches)	2

Surface: Concrete Asphalt Barren
Surface Completion: Flush Mount Aboveground

Cost Estimate Explanation:

(1) Mobilization/Demobilization: Includes all costs and mileage to transport equipment, materials, and personnel to and from the site location. More than one mobilization event of either the drilling rig or support vehicle will require justification and pre-approval by the DEQ-PRS and Board staffs. This item should be estimated on a per mile unit rate

(2) Soil Boring Installation: Includes all costs (labor, equipment, and materials) to drill, collect soil samples and abandon soil borings, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.

(3) Monitoring Well Installation: Includes all costs (labor, equipment, and materials) to drill, collect soil samples, and complete monitoring well to specifications and according to Montana Well Drillers Board rules, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.

(4) Drilling Standy: Drilling standby should be estimated on an hourly basis. Prior approval and justification for accumulating standby time is needed prior to billing.

(5) Well Development: Includes all costs (labor, equipment, and materials) to develop monitoring wells. This task should be estimated using a per well unit rate.

(6) Monitoring Well Abandonment: Includes all costs (labor, equipment, and materials) to properly abandon a well location according to the Montana Well Drillers Board rules. Abandonment costs should be estimated using a per well unit rate.

Soil Boring/Monitoring Well Installation Unit Cost Worksheet

TASK		UNIT COST		NUMBER OF UNITS	TOTAL COST
Mobilization/Demobilization (1)					
Mobilization/Demobilization: Drilling Rig		$ 2.00	/mile	400	$ 800.00
Mobilization/Demobilization: Support Vehicle		$ 1.50	/mile	400	$ 600.00
Soil Boring Installation (2)					
Drilling (0'-50' range per boring)		$ 36.00	/foot	42	$ 1,512.00
Drilling (50'-100' range per boring)			/foot		$ -
Other (please specify) _____					$ -
Monitoring Well Installation (3)					
Drilling (0'-50' range per well)		$ 30.00	/foot	42	$ 1,260.00
Drilling (50'-100' range per well)			/foot		$ -
Other (please specify) _____					$ -
Drilling Standby (4)					
-prior approval needed		$ 125.00	/hour		$ -
Well Development (5)					
Well Development		$ 150.00	/well		$ -
Monitoring Well Abandonment (6)					
Abandonment		$ 300.00	/well		$ -
Lodging may only be paid at actual costs when documented by receipts.					
Per Diem					
Lodging: number of individuals =	2	$ 100.00	/person per day	1	$ 200.00
Food: number of individuals =	2	$ 23.00	/person per day	1	$ 46.00
(Breakfast 5.00, Lunch 6.00, Dinner 12.00)					
			TOTAL PROJECT EXPENSE		**$ 4,418.00**

D.O.T. Drums $95.00

Additional Conditions/Comments/Costs:

Drill 3 soil borings to Approx. 14' each and construct 2" monitor wells at Ennis, MT

If you require assistance, call 406-841-5090.

Submit completed form to:

Petroleum Tank Release Compensation Board PO Box 200902, Helena MT 59620-0902